

AMENDMENTS

Amendment to the Specification

Please replace the paragraph beginning on page 9, line 20 with the following:

In another embodiment, the present invention provides a system for employing and delivering an oxidant solution comprising free radical species, such as, but not limited to, hydroxyl free radical species to water system 10. Free radical source or generating apparatus 25, according to one embodiment of the present invention, is schematically illustrated in FIG. 2. Free radical generator 25 can have an inlet 26, typically from a reactant solution source (not shown), and an outlet 28. Connecting the inlet and the outlet is typically a channel 30, such as an annular chamber. According to one embodiment, within the chamber resides an actinic radiation source 32 contained within a transparent wall 34. Free radical generator 25 can have channel 30 that can fluidly connect the inlet and is disposed to flow substantially pure water therethrough. Free radical generator 25 can also comprise a source of actinic radiation that is disposed to irradiate the substantially pure water flowing along the channel such that upon irradiation, free radicals are generated therein. In some cases, outlet 28 of the free radical generator is fluidly connected to circulation system 14 at port 24. In some embodiments, the actinic radiation source emits electromagnetic radiation in the ultraviolet range, preferably with a wavelength that is less than 300 nanometers and more preferably with a wavelength that is less than 254 nanometers. The free radical generator apparatus, according to some embodiments of the present invention, has a low power consumption, such as about or less than 100KW, in some cases, about or less than 10 KW and, in other cases, about or less than 1 KW for a water system that has about or greater than 10,000 gallons of water. Examples of actinic radiation sources are available commercially from, for example, Aquionics Incorporated (Erlanger, Kentucky). The intensity of the actinic radiation source can vary, typically, decreasing, after, a period of use. For example, the rated intensity or dosage of a specific ultraviolet lamp can decrease over time as described by Rodriguez et al. in "Disinfection, Liquid Purification by UV Radiation, and Its Many Applications," *Ultrapure Water*, September 1991, pages 22-30, which is incorporated herein in its entirety. Typically, an ultraviolet lamp is ~~ated accordingly~~ accordingly at its end of lamp life to insure minimum dosage levels. The present

invention is not limited to a particular low or medium pressure lamp; thus, either or both may be used provided the lamp has sufficient intensity to initiate or generate the required free radical species yield.

In the Drawings

Please replace FIG. 2 with the attached FIG. 2.